

UNITED STATES MARINE CORPS
Logistics Operations School
Marine Corps Combat Service Support Schools
Training Command
PSC Box 20041
Camp Lejeune, North Carolina 28542-0041

AOM 6203

STUDENT OUTLINE

CATEGORIES AND ECHELONS OF MAINTENANCE

LEARNING OBJECTIVES

1. TERMINAL LEARNING OBJECTIVES:

(a) Given a list of maintenance tasks applicable to tactical wheeled vehicles and required references, determine the appropriate category of maintenance for each of the tasks per MCO P4790.1. (6.2.1)

(b) Given a list of maintenance tasks applicable to tactical wheeled vehicles and required references, determine the appropriate echelon of maintenance for each of the tasks per MCO P4790.1. (6.2.2)

2. ENABLING LEARNING OBJECTIVES: Given the required reference and a list of representative maintenance tasks applicable to tactical wheeled vehicles per information contained in the reference provided, identify tasks appropriate for:

- (a) organizational maintenance, (6.2.1a)
- (b) intermediate maintenance, (6.2.1b)
- (c) depot maintenance, (6.2.1c)
- (d) first echelon maintenance, (6.2.2a)
- (e) second echelon maintenance, (6.2.2b)
- (f) third echelon maintenance, (6.2.2c)
- (g) fourth echelon maintenance, and (6.2.2d)
- (h) fifth echelon maintenance. (6.2.2e)

OUTLINE

1. MAINTENANCE CATEGORIES AND ECHELONS

a. There are three categories of maintenance in the Marine Corps maintenance system: organizational, intermediate, and depot.

b. Organizational and intermediate categories are each subdivided into two echelons of maintenance, with depot containing one echelon of maintenance.

2. ORGANIZATIONAL MAINTENANCE

a. Organizational maintenance consists of first and second echelon maintenance. It may be scheduled, as in the frequency at which you conduct a semiannual inspection or it may be unscheduled such as when a radiator hose breaks and you have to replace the hose. Organizational maintenance is performed by the using or owning unit on its own equipment.

(1) First echelon maintenance is performed by the operator or crew of the vehicle. It includes the before, during, and after operation checks that are conducted every, I repeat...every time a vehicle is operated. First echelon maintenance also includes simple adjustments, repairs and tests. All tasks in the operator's manual, sometimes referred to as "TM 10" are the operator's responsibility.

(2) Second echelon maintenance is more involved than operator's maintenance. It is performed by specially trained personnel like you who are graduates of the AOMC.

(a) The availability of tools, test equipment, and authority to order replacement parts are other factors involved in what you can do to your equipment at each of the various echelons of maintenance. For instance, within an organizational maintenance shop you will perform second and some third echelon maintenance. The shop will have portable test equipment to test alternators on the vehicle. If test results indicate the alternator is defective, you can replace it but you are not authorized to repair the alternator; that is a fourth echelon task. The reasoning is simple; you must have an alternator, generator, regulator test stand to test the alternator after

repair and that item is only available at fourth echelon maintenance shops.

(b) At this point, you might be wondering why the test stand needed to test repaired alternators is not available to the second echelon maintenance mechanic. Again, there is a logical reason. It is simply not cost effective to equip each organizational maintenance shop with the costly array of equipment required for each shop to have complete repair capability. Also, it requires special training to learn how to accomplish complete repair on electrical components. If all organizational maintenance mechanics were trained to rebuild components, each would only spend a very small percentage of his time performing that type of work. As a result, the time and money necessary to train all mechanics to perform fourth echelon repairs would not be well spent. Something else to consider is mobility. Fourth echelon maintenance is normally conducted in semi-fixed facilities. The units we support (infantry, artillery, tanks, and so forth) must be mobile. We simply can't be encumbered by heavy and complex test equipment and all the special tools required by intermediate maintenance units (third and fourth echelon maintenance).

(c) I need to back up for a moment and clarify third echelon maintenance. Truth is, some third echelon maintenance is done in organizational maintenance shops and some, or most, is done in intermediate maintenance activities. Mostly, where third echelon maintenance is accomplished and by whom is a matter of how we are organized, the mission statement in our table of organization, and restrictions imposed by the maintenance allocation chart or MAC, as it is called.

1 You'll learn more about the MAC later in this lesson. Right now, suffice it to say that the MAC located in the organizational maintenance manual, your TM 20, contains a list of all maintenance functions applicable to the vehicle the TM 20 pertains to. The list is coded so you will know what can be done where.

2 Remember, I told you that the way we are organized also plays a part in what echelons of maintenance are performed where. Here is an example. Within the Force Service Support Group (FSSG), there is a maintenance battalion. Currently included in units assigned to the maintenance battalion are a Motor Transport Maintenance Company (MTM Company) and General Support Maintenance Company (GSM Company). In the future, the names of the companies may change due to

reorganization within the Marine Corps but, the functions the units perform will be essentially the same. If you were in the 10th Marines, an artillery unit, in the motor transport section and one of your trucks needed to have the engine replaced, you would send your truck to MTMCo

with the appropriate paperwork. Mechanics in MTMCo would remove the engine and replace it, a third echelon task, with one that had been rebuilt, a fourth echelon maintenance function, by Marines in GSMCo. However, if your unit was deployed, say to Camp Pickett in Virginia, the engine would be replaced in your unit which only has organizational maintenance authority. This can happen because you would have a detachment of Marines with you from 2d FSSG for that purpose. This would be called a Combat Service Support Detachment. However, on large scale deployments, the Marines from the FSSG would retain autonomy because they would be supporting more than one unit. In that case, they would be called a Marine Service Support Group.

3 I also told you the mission statement in your unit's table of organization controls the type of maintenance your unit is authorized to perform. A table of organization (T/O) is a manning level document indicating the manpower requirements assigned to a unit. The number of people authorized to a unit and their skills (MOS's), determines the level of maintenance authorized. The school's T/O mission statement authorizes the school to perform organizational maintenance (first, second, and third echelon) when support is not available from the 2d FSSG at Camp Lejeune.

4 Before we leave our discussion about organizational maintenance, I want you to understand that organizational maintenance is also responsible for semiannual, annual, and biennial preventive maintenance checks and services (PMCS). It is during these critical services that you will do the things that keep the vehicle on the road in between PMCS. These services include lubrication, changing oil and filters, detailed inspections and, if done properly, also include lots of tests to make sure equipment items are functioning properly and capable of doing so until the next PMCS. Many times these PMCS include reconditioning of brake systems which is authorized at a second echelon maintenance shop. Organizational maintenance also includes trouble diagnosis and comprehensive testing to find the cause of vehicle malfunctions. Ultimately, you may not

be able to make the repair that will correct the problem because it is only authorized at a higher level of maintenance but you will be one of the most valuable men in the shop if you can quickly and accurately perform trouble diagnosis.

(d) The fuel tank in the fuel system provides a good example of first, second, and third echelon maintenance responsibilities.

1 In the Maintenance Level column, the Crew (C) is authorized to inspect the tank. This requires the operator/crew to look for leaks or damage to the fuel tank. Tools and test equipment are not required. First echelon maintenance.

2 The unit maintenance, another term used for second echelon maintenance, is authorized to replace the fuel tank. Replacing the tank requires tools that are not available to the operator and crew.

3 After the organizational mechanic has removed the fuel tank, it would be repaired by third echelon maintenance. After the fuel tank has been repaired, it would be returned to the using unit and installed in the vehicle by an organizational maintenance mechanic. Second echelon maintenance.

3. Intermediate Maintenance

a. Intermediate maintenance activities (IMA's), such as the FSSG's and MWSG's, support organizational maintenance activities. What is an MWSG? It is a Marine Wing Support Group that does essentially the same thing as the FSSG except it is part of a Marine Aircraft Wing. Yes, some of you may well be assigned to a wing unit. They have trucks to maintain and plenty of them.

b. Intermediate maintenance is mainly involved in component replacement and rebuild. They rebuild components, such as engines, transmissions, transfer cases, axles, and most other major vehicle components. Within intermediate maintenance, there is also a group of specially trained personnel (Fuel and Electrical Systems Repairmen) who rebuild fuel and electrical system components. Those men are assigned MOS 3524 after being

trained in our Fuel and Electrical Systems Component Repair Course.

c. Don't get the idea that you have to wait for intermediate maintenance to rebuild your engine or whatever when you turn it in. The intermediate maintenance activity, in effect, works for supply. When you turn your engine in, you draw a rebuilt one from the secondary repairable float. Your engine will be rebuilt and put back in the "float." The "float" consists of items that have been rebuilt and are maintained in RFI (Ready for Issue) condition within the SASSY Management Unit or SMU (pronounced SMOO). You can relate to this if you have ever bought a rebuilt component for your private automobile and had to pay what is called a "core" charge that was refunded when you turned in your old component. The parts houses, such as Auto Zone, have suppliers that rebuild the components you turn in and then they are sent back to the automotive store for sale to the next customer who needs one.

d. You'll recall that I said people from the IMA might be attached to your organizational maintenance unit when you deploy. They also send out maintenance support teams to do third and fourth echelon maintenance on-site. These are called "contact teams," and are sent out at the request of the organizational maintenance unit. An instance of that comes to mind. When our old fleet of multi-fuel powered engines all had to be derated (fuel injection systems adjusted) and valve operating mechanisms inspected and adjusted. That was fourth echelon work but the FSSG sent teams out to all organizational maintenance units to do the work. They had the expertise and tools to do the job; organizational maintenance units didn't.

e. The IMA also is responsible for repair and calibration of our test equipment and torque wrenches. That is done by an organization called "ELMACO" which stands for Electronics Maintenance Company.

f. While we're looking at the MAC let's all turn to page B-3 and locate the engine. Look in the maintenance level column and note that first echelon is responsible for inspecting the engine. Second echelon is required to test it, third echelon is authorized to replace it and fourth echelon is required to repair the engine. As a result of our little exercise we just had, you know how to determine what is organizational and intermediate maintenance. Furthermore, you know how to differentiate between tasks that are considered first, second, third, and fourth echelon maintenance.

g. Before we move on to talk about what is called depot maintenance, I want you to think back to what I said about mobility. Obviously, to do all the heavy maintenance that the IMA is responsible for they need a lot of large sophisticated equipment. They simply could not be fragmented on a continuing basis and do their work in organizational maintenance shops. In the grand scheme, the IMA's support many organizational maintenance units.

4. DEPOT MAINTENANCE

a. An oversimplified explanation of depot or fifth echelon maintenance, as it relates to motor transport, is that the depot rebuilds complete vehicles and components.

b. Currently, the Marine Corps has a program called IROAN which means inspect and repair only as necessary. If the age or condition of a vehicle qualifies it for the IROAN, the whole vehicle goes to, in our case, Albany, Georgia. At the Marine Logistics Base in Albany, they have production lines similar to the ones vehicle manufacturers have. A vehicle inducted into the IROAN program goes down the assembly line and anything that doesn't meet a certain specification is repaired. A good example that you can relate to would be tires. In the IROAN program, tires are not just automatically replaced. If the tires meet the serviceability standard set for the IROAN, for example, 80% of tread on the tire must still be left, the tires would not be replaced and they were otherwise serviceable.

c. At Albany, they also rebuild components; however, the rebuild of components is more extensive than in the IMA. Albany has the capability to do extensive machining, such as a line boring camshaft and crankshaft seats and boring cylinders.

d. The depots, there is one in Albany, as I said, and another in Barstow, California, support the IMA's. You can visualize the whole system as a triangle where all the organizational maintenance units are at the base. There are lots of organizational maintenance units. Halfway up the triangle would be the IMA's, there are three each of them on the air and ground sides of the Marine Corps. Near the top of the triangle, you can mentally place the Marine Corps two depots. Depot maintenance is undergoing change though. Nowadays, all activities are being held to strict budgets and support units are supposed to be managed to be profitable as in the civilian

community. That means if some Army depot can rebuild a truck cheaper than our depots can, they would get the contract.

5. By way of review, I'll give you a minute to look at a chart that depicts the three categories of maintenance and also shows you which echelons of maintenance are performed in each category. I'll take any questions you have after you have had a moment or two to look at the chart.

6. PREVENTIVE AND CORRECTIVE MAINTENANCE

a. Some systems of our vehicles require attention at specified intervals. This is scheduled preventative maintenance. An example of scheduled preventative maintenance would be replacement of the fuel filter every 12 months or 6,000 miles, whichever comes first.

b. Corrective maintenance (CM) is not scheduled. CM is a maintenance action performed to restore the vehicle to a specific condition. An example of CM would be replacement of a faulty wheel bearing.

7. USE OF PUBLICATIONS TO DETERMINE MAINTENANCE RESPONSIBILITY

a. If you are in doubt about what echelon of maintenance is responsible for performing a specific maintenance task, you should check the maintenance manual for that series vehicle.

b. As stated earlier, the Maintenance Allocation Chart (MAC), in the 20 series manuals, lists the maintenance and repair functions authorized at the various echelons of maintenance.

(2) The Source, Maintenance and Recoverability (SMR) Codes provided in equipment repair parts manuals will inform you what echelon of maintenance is authorized to install, replace or use the item.

(3) You will learn more about the MAC and SMR codes in the near future.

STUDENT REFERENCES:

MCO P4790.1
TM 9-2320-272-20-2